



Curriculum Map For Product Design Year 13

YEAR 13	Autumn 1 & 2
Topics	<p style="text-align: center;">Independently Chosen Context - NEA</p> <p style="text-align: center;">A01 - Identifying & Investigating Design Possibilities to Address Needs and Wants</p> <p style="text-align: center;">A02 - Design & Make Prototypes That Are Fit For Purpose</p> <p style="text-align: center;">A03 - Analyse and Evaluate</p> <p style="text-align: center;">Design Decisions and Outcomes, Including for Prototypes Made By Themselves and Others</p> <p style="text-align: center;">Wider Issues in Design & Technology</p>
Substantive Knowledge – The Knowledge Taught By The Teacher	<p>Students will learn:</p> <ul style="list-style-type: none"> • To recognise the physical differences between softwood and hardwood trees. • The names of several specific softwoods, hardwoods and manufactured boards. • The names of commercial stock forms for natural timber, manufactured boards and mouldings. • To recognise some physical differences in the appearance of woods. • About a range of specific material tests applied to wood. • The specific finishes applied to wood. • The ways in which the working properties of timber-based materials can be enhanced. • What composite materials, smart materials and modern materials are and give examples of each. • The advantages of specific composite, smart and modern materials and how they can improve product performance. • Examples of suitable applications for specific composite, smart and modern materials: <ul style="list-style-type: none"> - How smart materials respond to specific external stimuli.
Disciplinary Knowledge – How The Knowledge Will Be Developed & Applied	<ul style="list-style-type: none"> • Analysis of the work of others for external influences and inspiration. • Self-reflection and evaluation of research. • Self-reflection and evaluation of designs. • Responding to client feedback to meet their needs. • To understand how the work of key designers still influences our world today. • Describe how the use of feedback and testing informs the evaluation process.
Skills	<ul style="list-style-type: none"> • Effective use of PowerPoint for presentation purposes. • Focus of literacy skills to explain and justify all research and decisions made. • Problem solving. • Analysing existing products with the purpose of taking influence. • User profiling. • To develop individual drawing skills/style. • Manual and CAD/CAM prototyping skills development.
Links To Prior	<ul style="list-style-type: none"> • Combining all skills from Year 12 and below. • Tessellation.

Learning	<ul style="list-style-type: none"> • Use of workshop tools and equipment. • Modelling quality prototypes reflecting designs. • Manufacturing according to individual designs and plans.
Literacy/ Numeracy	<ul style="list-style-type: none"> • Literacy: ongoing self-reflection and evaluation, the analysis and comprehension of feedback from others. • Numeracy: accuracy of measuring and marking and use of scale and tessellation. Using settings on tools and equipment to work within tolerances.
Cross Curricular	<ul style="list-style-type: none"> • Constant referral to SMSC when designing and manufacturing. • Sustainability of materials and lifecycle assessment. • Understanding the sources and origins of materials and how our choices affect the planet and ecosystems. • Sustainability of materials and lifecycle assessment of a broad range of materials such as wood, metal, plastic, textiles and papers/cards and the impact of their continued production and use on the planet.
Assessment	<ul style="list-style-type: none"> • Continual Teacher Feedback • Ongoing Exam Questions Through Online Worksheets • End of Unit Tests

YEAR 13	Spring 1 & 2
Topics	<p style="text-align: center;">Independently Chosen Context - NEA</p> <p style="text-align: center;">A03 - Analyse and Evaluate:</p> <p style="text-align: center;">Design Decisions and Outcomes, Including For Prototypes Made By Themselves and Others</p> <p style="text-align: center;">Wider Issues in Design and Technology</p> <p style="text-align: center;">A04 - Demonstrate and Apply Knowledge and Understanding of:</p> <p style="text-align: center;">Technical Principles</p> <p style="text-align: center;">Designing and Making Principles</p>
Substantive Knowledge – The Knowledge Taught By The Teacher	<p>Students will learn:</p> <ul style="list-style-type: none"> • How papers and boards can be shaped into different products. • How adhesives and fixings are used on papers and boards. • How jigs and fixtures can aid the manufacture of products. • Finishing techniques used on papers and boards. • How printing processes can be used for different products. • Different joining techniques. • Methods of forming woods. • Finishes and treatments applied to woods. • Suitable finishes for a range of products. • How polymers can be formed into 3D products. • About a range of different forming methods for a range of products and scales of production including extrusion and calendaring. • About a range of different forming methods for a range of products including vacuum forming, line bending, laminating, thermoforming, injection moulding, blow moulding, rotational moulding and compressions moulding. • About appropriate solvent cements such as Tensol or acrylic cement. • How polymers can be finished to enhance their aesthetics or for improved function. • How some polymers are self-finishing which is known as a polymer finish. • How pigments can be added to polymers in the moulding process.

	<ul style="list-style-type: none"> • The different methods of metal manufacture. • How metals can be shaped into 3D products. • The process of several different forming methods. • The names of several different permanent and temporary metal joining methods. • About different metal wasting processes. • A range of different machines used in the manufacture of metal products. • How different methods of finishing metals are applied to enhance their appearance or prevent corrosion.
Disciplinary Knowledge	<ul style="list-style-type: none"> • Specialist tools, equipment, techniques and processes. • Health and Safety. • Manufacturing. • Self-reflection and evaluation of research. • Self-reflection and evaluation of designs. • Reaction to client feedback. • Responding to client feedback to meet their needs. • To investigate possible new processes and technologies which may be of importance. • Understand how products are developed to be inclusive in their design. • Be aware of products that are inclusively designed for a wide range of users. • Explain the importance of environmental issues in design and manufacture and the related responsibilities of designers and manufacturers. • Understand the concept of a circular economy and the application of the life cycle assessment tool.
Skills	<ul style="list-style-type: none"> • Problem solving. • Use of the iterative process to design, test, receive feedback, re-design and re-test. • Persistent referral back to and evaluation against user profiling. • Practical workshop skills. • Practical CAD/CAM skills. • Decision making, which materials and processes best suit the individual project outcome.
Links To Prior Learning	<ul style="list-style-type: none"> • Combining all skills from Year 12 and below. • Tessellation. • Use of workshop tools and equipment. • Modelling quality prototypes reflecting designs. • Manufacturing according to individual designs and plans.
Literacy/ Numeracy	<ul style="list-style-type: none"> • Literacy: ongoing self-reflection and evaluation, the analysis and comprehension of feedback from others. • Numeracy: accuracy of measuring and marking and use of scale and tessellation. Using settings on tools and equipment to work within tolerances.
Cross Curricular	<ul style="list-style-type: none"> • Constant referral to SMSC when designing and manufacturing. • Sustainability of materials and lifecycle assessment. • Understanding the sources & origins of materials and how our choices affect the planet and ecosystems. • Sustainability of materials and lifecycle assessment of a broad range of materials such as wood, metal, plastic, textiles and papers/cards and the impact of their continued production and use on the planet.
Assessment	<ul style="list-style-type: none"> • Continual Teacher Feedback • Ongoing Exam Questions Through Online Worksheets • End of Unit Tests

YEAR 13	Summer 1 & 2
Topics	<p align="center">Theory Consolidation Covering All Units But Specifically Those With Lower Testing Results</p> <p align="center">NEA Completion/Overrun If Necessary</p> <p align="center">Exam Preparation</p>
Substantive Knowledge – The Knowledge Taught By The Teacher	<ul style="list-style-type: none"> • Covering all learning and identified gaps in knowledge from Years 12 and 13.
Disciplinary Knowledge – How The Knowledge Will Be Developed & Applied	
Skills	<ul style="list-style-type: none"> • Revision Techniques • Exam Preparation <p>Potentially if there is NEA completion:</p> <ul style="list-style-type: none"> • Use of the iterative process to design, test, receive feedback, re-design and re-test. • Persistent referral back to and evaluation against user profiling. • Practical workshop skills. • Practical CAD/CAM skills. • Decision making, which materials and processes best suit the individual project outcome.
Links To Prior Learning	<ul style="list-style-type: none"> • Revision of knowledge learnt in Years 12 and 13.
Literacy/ Numeracy	<ul style="list-style-type: none"> • Literacy: revision techniques, exam preparation, exam question techniques particularly long-answer questions. • Numeracy: revision of numerical and data techniques and skills covered in Years 12 and 13.
Cross Curricular	
Assessment	<ul style="list-style-type: none"> • Continual Teacher Feedback • Ongoing Exam Questions Through Online Worksheets • End of Unit Tests • Practice Exam Papers